

REMARKS

Reconsideration and allowance of this application are respectfully requested in view of the above amendment and the discussion below.

Applicants invention concerns an improved motor generator control system for a hybrid car wherein the motor generator is connected to an engine as its drive source. The present invention provides a control system which controls the current aperture phase and adjusting field component by the system of independent claims 15, 16 and the method of independent claims 25 and 27.

More particularly, the motor generator 3 is connected to an internal combustion engine started by a battery 10 wherein the battery 10 is charged by rotation of the internal combustion engine. An inverter 5 controls the drive and power generation of the motor generator 3, and a control circuit 4 controls the inverter. The motor generator is driven by the battery 10 to start the engine 1 and after it starts, the device is charged by a generation mode of the motor generator 3. A step-down chopper circuit 9 between the battery 10 and the inverter 9 is controlled to provide that the power generation voltage will reach the level of the battery charging voltage through a step-down chopper circuit, as defined by independent claim 15. When the motor generator is started by the electric power of the battery device, a battery voltage is stepped up to drive the motor generator and to start the internal combustion engine as defined by independent claim 16. Method claims 25 and 27 provide method steps similarly

related to the apparatus of Figure 1 and corresponding to the apparatus of independent claim 15.

Claims 15-16, 25-28 and 32 have been rejected under 35 U.S.C. 102 as anticipated by Kinoshita et al. U.S. Patent No. 6,066,928 relying on Figure 17 as indicated at item 6 of the Patent Office Action. Similarly, claims 17 to 20 have been rejected as obvious over the '928 reference as detailed at item 8 on pages 4 and 5 of the Patent Office Action. Claims 21-24, 33-36 and 40 have been rejected over the combination of Kinoshita et al. and Sasaki U.S. Patent No. 6,476,571 as detailed at items 9 on pages 5 and 6. Lastly, claims 29-31 and 37-39 have been indicated as allowable if rewritten in independent form.

Applicants respectfully traverse these rejections on the grounds that each of independent claims 15, 16 and 25, 27 provide structural or method limitations not shown or made obvious by the reference to Kinoshita et al. '928.

The rejection relies on Figure 17 of the '928 reference. As indicated in the specification at column 1 of the '928 reference, there is an arrangement by which chopper 10 is inserted between the capacitor 9 and the main battery 14. Column 1, lines 34 to 36 indicate that a chopper 10 is inserted between the capacitor 9 and the main battery 1 when referring to Figure 16. It is submitted that Figure 17 has a similar arrangement whereby the chopper 10 is inserted between the capacitor 9 and the chemical battery 14. As indicated at column 1 beginning at line 38 the Figure 17 uses a chemical battery 14 as a battery for absorbing excess power but because the battery is not a high power type, the capacitor 9, as a high

power type battery is connected in parallel with the battery 14 with the chopper 10 inserted in between. Power generated by the generator is not the maximum power required for acceleration so that, according to column 1 of the '928 reference, during acceleration, which requires high power, the electric power is supplied from the capacitor 9 through the chopper 10. When the vehicle is stopped it only runs by means of the battery 14.

Therefore the present invention defines, in independent claim 15 that the step down chopper circuit is provided between the battery and the inverter which is clearly not the case in Figure 17 of the '928 reference, as discussed above. Additionally, because the operation of the '928 reference with respect to Figure 17 concerns two batteries having different purposes, it would not be obvious to modify the '928 reference to provide the claimed structure and method of the present invention.

Independent claim 16 recites a chopper circuit which functions so that, when the motor generator is started by electric power of the battery, the battery voltage is stepped up to drive the motor generator and to start the internal combustion engine. It is submitted that the battery 14 of Figure 17 of the '928 reference is used to start the internal combustion engine and there is no stepping up of the battery voltage as required by independent claim 16.

Method claim 25, similar to apparatus claim 15 requires voltage step-down control by step-down chopper circuit to step down the voltage until it agrees with the charging voltage of the main battery. Independent claim 27 is a

agrees with the charging voltage of the main battery. Independent claim 27 is a method wherein, if a voltage generated by the motor generator is greater than the charging voltage of the main battery, voltage step-down control is performed by step-down chopper circuit to step-down the voltage until it agrees with the charging voltage of the main battery.

The secondary reference to Sasaki U.S. Patent No. 6,476,571, even accepting that statement of the rejection for its showing, adds nothing toward meeting the claim limitations of independent claims 15, 16, 25 and 27.

The rejection of claim 32 under 35 U.S.C. 112, second paragraph with respect to insufficient antecedent basis has been addressed by the above Amendment to claim 32.

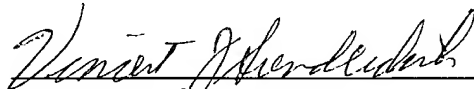
Therefore, Applicants respectfully request that this application containing claims 15-40 be allowed and be passed to issue.

If there are any questions regarding this amendment or the application in general, a telephone call to the undersigned would be appreciated since this should expedite the prosecution of the application for all concerned.

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If necessary to effect a timely response, this paper should be considered as a petition for an Extension of Time sufficient to effect a timely response, and please charge any deficiency in fees or credit any overpayments to Deposit Account No. 05-1323 (Docket #056207.50398US).

Respectfully submitted,



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